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(54) IMPROVEMENTS IN CLAMPS AND HINGES

71 I. FERGUS O'FARRELL, a citizen of the Republic of Ireland, of 24 Duke Street, Dublin 2, Republic of Ireland, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement. —

10 The present invention relates to a clamping device and is particularly concerned with clamping devices which will facilitate the mounting of panel elements, for example for display or partitioning purposes, and the subsequent dismounting of such elements. 15 Known clamps for this purpose are generally of a type in which a clamping action is obtained by screw-closure of the jaws of the clamp, and the operation of such clamps tends to be slow. It is an object of the present invention to provide a clamp which may be opened or closed by a single, quick-action, movement, and which is particularly suitable for clamping panel elements in pivotal relation.

25 The invention provides a clamping device comprising two clamping members each comprising two opposed limbs connected together at one end thereof by a stock portion and spaced apart to define a slot into which an article to be clamped may be inserted, a cam or eccentric rotatably mounted in one limb and adapted when the clamp is in a closed position to protrude into the slot to grip the article to be clamped, and wherein 35 the two clamping members are pivotally connected together at the stock portions thereof. In one embodiment the two clamping members are pivoted about a pintle having its axis parallel to the axis of rotation of each cam or eccentric. The pintle may be hollow to enable a plurality of clamping devices and members to be pivotally connected together in stacked arrangement by means of a common pin inserted through the hollow pintles. In another embodiment the two clamping members are pivoted about a dowel pin, bolt or screw having its longitudinal axis arranged perpendicular to the

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pivotal axis of each cam or eccentric. Preferably, the acting-face or edge of the cam or eccentric has a gripping region which is furthest from the axis of rotation of the cam or eccentric, and the cam or eccentric is rotatable from a clamping position in which the gripping region protrudes into the slot to an open position where the gripping region is retracted from the slot without the cam or eccentric passing overcenter. The cam or eccentric should be so designed, and mounted in the limb, that the rotation thereof, preferably through an angle of 180° or less, brings the gripping region of the acting-face or edge from an open position where it is retracted from the slot, through a position where the acting-face or edge bears gradually upon the surface of the article to be clamped, to a closed position where the gripping region presses upon and grips the article to be clamped.

70 The cam may consist of a cylindrical block eccentrically journalled above an aperture in the face of the limb. A short handle or lever may be attached to the block on the side remote from the gripping region thereof so as to enable the cam to be readily turned one way or the other by the finger. 75 Preferably, the gripping region consists of an axially extending substantially flat surface formed on the face of the cylindrical block. To attach a clamping member to a panel, a marginal portion of the panel is inserted into the slot between the limbs of the member, the cam being first turned into an open position such that the gripping region lies outside, and does not obstruct, the slot. 80 The panel may be firmly gripped by partially turning the cylindrical cam, for example through an angle of 180°, to cause the gripping region of the cam to protrude into the slot and to press upon the adjacent surface of the panel. In this way the panel is gripped between the gripping region of the cam and the inner face of the opposite limb without the cam passing overcenter. 85

90 One application of the invention concerns the provision of hinges which may be easily

ally connected together which gives great versatility in the relative positioning of panels.

The clamping members may be made of metal, wood or plastics material. In order that the clamping members may accommodate panels of different thicknesses inserts 17 (see Figure 5) may be inserted between a surface of the panel and the inner surface of limb 2. The inserts 12 may be of cork or some other moderately resilient material. The inner surface of limb 2 may be knurled or otherwise roughened to increase friction between the surface of the limb and the surface of the panel. Preferably, the end of lever 11 is bevelled, as shown in Figure 5, to facilitate the lifting of the lever when it is in the position shown in Figure 1.

Clamping devices according to the invention may be used in the erection of stands and the like for exhibition purposes and for the connection of partitions for space division. They may also be used for the mounting of lights and other fitments and for the connection together of building elements in constructional toys.

WHAT I CLAIM IS:—

1. A clamping device comprising two clamping members each comprising two opposed limbs connected together at one end thereof by a stock portion and spaced apart to define a slot into which an article to be clamped may be inserted, a cam or eccentric rotatably mounted in one limb and adapted when the clamp is in a closed position to protrude into the slot to grip the article to be clamped, and wherein the two clamping members are pivotally connected together at the stock portions thereof.

2. A clamping device according to Claim 1 wherein the two clamping members are pivoted about a pintle having its axis parallel to the axis of rotation of each cam or eccentric.

3. A clamping device according to Claim 2, wherein the pintle is hollow such that a plurality of clamping devices and members may be pivotally connected together in stacked arrangement by means of a common pin inserted through the hollow pintles.

4. A clamping device according to Claim 1, wherein the two clamping members are

pivoted about a dowel pin, bolt or screw having its longitudinal axis arranged perpendicular to the pivoted axis of each cam or eccentric.

5. A clamping device according to any one of the preceding Claims, wherein an acting face or edge of each cam or eccentric has a gripping region which is furthest from the axis of rotation of the cam or eccentric, and the cam or eccentric is rotatable from a clamping position in which the gripping region protrudes into the slot to an open position where the gripping region is retracted from the slot, without the cam or eccentric passing overcenter.

6. A clamping device according to any one of the preceding Claims wherein each cam comprises a substantially cylindrical block eccentrically journaled above an aperture in the face of the limb.

7. A clamping device according to Claim 6, wherein a lever is attached to the block on the side remote from the gripping region of the block.

8. A clamping device according to Claim 7 wherein the gripping region consists of an axially extending substantially flat surface formed on the face of the cylindrical block.

9. A clamping device as claimed in any of Claims 6 to 8 wherein each clamping member has a pair of parallel flanges disposed and in spaced apart relation to each side of the aperture and extending outwardly from the limb, said flanges being normal to the plane of the slot and having the cylindrical block journaled therebetween.

10. A clamp according to either of the preceding claims, wherein the face of the limb opposite the cam or eccentric is lined with a resilient material.

11. A clamping device according to any of Claims 1 to 3, and Claims 5 to 10 when dependent upon Claims 1 to 3, wherein the stock portions of the clamping members are provided with laterally extending knuckles which interengage in hinged relation.

12. A clamping device substantially as hereinbefore described with reference to Figures 3, 4 and 5 of the accompanying drawings.

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Agents for the Applicant.

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